# Performance of an app measuring spot quality in dried blood spot sampling

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# Performance of an App measuring spot quality in Dried Blood Spot sampling

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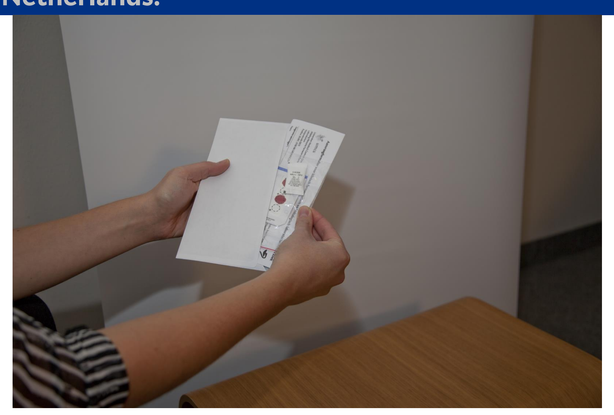
***The Dried Blood Spot sampling (DBS) method gives patients and health care workers the opportunity for remote sampling using a drop of blood from a fingerprick on a sampling card which can be send to the laboratory by mail for the purpose of Therapeutic Drug Monitoring.***



## Objective

To develop a web-app measuring spot quality of DBS at time of sampling and measure it's performance in order to increase feasibility of DBS sampling in clinical practice.

## Methods

- The app is a responsive web-based app accessible in the browser on smartphone, tablet or desktop PC.
- Performance was measured by comparing the results of the app to a golden standard consisting of the combined judgment of two experienced analysts
- Performance qualification was set at 95.0 % accurate evaluation based on clinical experience.
- Sample size was calculated beforehand to be at least 186.
- Samples were collected by trained phlebotomists using the method patients use at home.

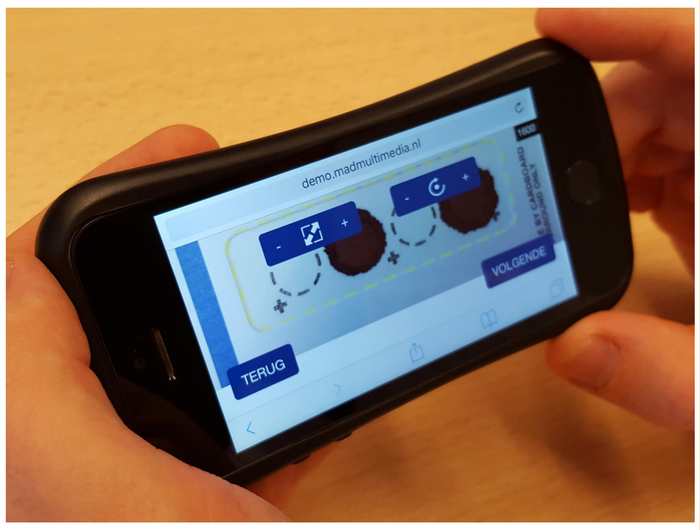
## Results

- 221 samples were collected on 204 different cards from 181 different patients.
- Performance was 90.0% with 4.1% false positive and 5.9% false negatives

## Using the app

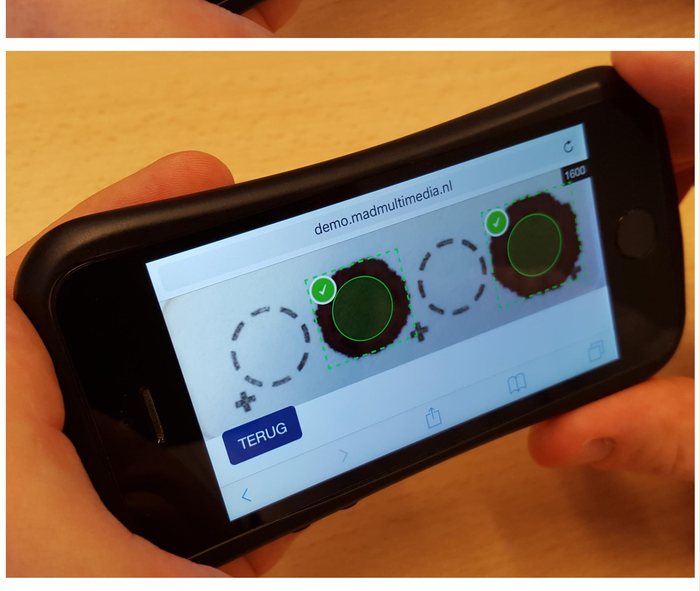
1. Take a picture

2. Align the picture using the buttons




3. Indicate the spots


4. Results




## Discussion

- False negative results will lead to (unnecessary) resampling but not to delayed monitoring.
- False positive results will lead to sending in insufficient quality spots leading to delayed monitoring.
- Although performance was not met, the current version of the web-app will lead to a rejection rate of 4.1% of all DBS samples.

## Conclusion

- The app is feasible for clinical application and will be implemented in clinical practice in the near future

## Future perspectives

- A user test will be performed to further increase the feasibility in clinical practice

## Test the app yourself:

1. Take a picture of the spots present
2. Visit the app at: http://demo.madmultimedia.nl/umcg-vingerprik-foto-app-v1/

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